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09/889,571	04/23/2002	Yoshiki Nakagawa	010903	1695

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EXAMINER

ZALUKAEVA, TATYANA

ART UNIT

PAPER NUMBER

1713

DATE MAILED: 09/03/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/889,571

Applicant(s)

NAKAGAWA ET AL.

Examiner

Tatyana Zalukaeva

Art Unit

1713

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 05 June 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-51 is/are pending in the application.
- 4a) Of the above claim(s) 19-51 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 and 8-18 is/are rejected.
- 7) ☒ Claim(s) 5-7 is/are objected to.
- 8) ☒ Claim(s) 1-51 are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 13
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

1. Amendment to claim 13 has overcome rejections under 35 USC 112, second paragraph. Claims 1-51 are pending; claims 19-51 are withdrawn from consideration.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 1-4, 8-12 stand rejected under 35 U.S.C. 102(a) /102(e) as being anticipated by Matyjaszewski et al (U.S. 5,763,548).

Matyjaszewski discloses ATR process (abstract) to obtain a living polymer having functional group at its terminus using redox catalyst [Cu(I)/Cu(II)] (abstract) to produce polymers having polydispersity as low as 1.15. End functional polymers are being produced. Fig.3 shows, for example, ATRP of methyl methacrylate in the presence of Cu(I)Cl and bipyridine initiated by 1-phenylethyl chloride. Suitable initiators are presented by a general formula  $R_1R_2R_3C-X$  (col.7, lines 45, 46), wherein X is a functional group defined in lines 50-58 of col. 8, and  $R_1$ ,  $R_2$ ,  $R_3$  are defined in col. 8, lines 60-67, col. 9, lines 1-15. X is preferably Cl or Br (col. 9, line 16, 18). Among the most preferred monomers Matyjaszewski names methyl Methacrylate, butyl acrylate, ethyl hexyl acrylate and styrene (col. 8, lines 40-44). Because the "living" (co)polymer chains retain an initiator fragment including X or X' as an end group, or in one embodiment as a substituent in a monomeric unit of the polymer chain, they may be **considered end-functional or in-chain functional (co)polymers**. Such (co)polymers may be used directly or be converted to other functional groups for further reactions,

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including crosslinking, chain extension, reactive injection molding (RIM), and preparation of other types of polymers (such as polyurethanes, polyimides, etc.) (col.17, 58-67). End-functional PSt having a COOH end group was prepared according to the procedure of Example 3, except that 2-chloropropionic acid was used in place of 1-PECl.

The polymer was obtained in 50% yield, and had an Mn 39,600 and an Mw /Mn =1.45. A telechelic PMMA with two Br end groups was prepared in ethyl acetate according to the procedure of Example 3, except that  $1.00 \times 10^{-4}$  mol  $C_6H_4(CH_2Br)_2$  was used in place of 1-PECl, CuCl was used, and Bpy was present. The polymer was obtained in 100% and had an Mw /Mn of 1.35. (see Examples 10-12, col. 36, examples 21-23, col. 38). In all of the above examples the compound having a functional group is introduced during polymerization or at the end point of polymerization for further functionalization. Compound disclosed in Examples 23 is a polymer having vinyl groups at either side.

Claims 13-18 stand rejected under 35 U.S.C. 102(a, e, b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Matyjaszewski.

Because of the nature of product-by process claims, the Examiner cannot ordinarily focus on the precise difference between the claimed product and the disclosed product.

It is then Applinats' burden to prove that an unobvious difference exists. See In re

Marosi, 218 USPQ 289, 292-293 (CAFC 1983).

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See also footnote 11 O.G. Notice 1162 59-61, wherein a 35 USC 102/103 rejection is authorized in the case of product-by-process claims because the exact identity of the claimed product or the prior art product cannot be determined by the Examiner.

Consult also *In re Thorpe*, 227 USPQ 964 (CAFC 1985), wherein product-by-process claims are rejected over a product, which although prepared in a different manner, appeared to be the same (prima facie) as the claimed product.

In the instant case there is no evidence, or no reason to believe that the process of polymerization as instantly claimed produces a different product, that of a polymerization of Matyjaszewski, as per *In re Thorpe*.

In the instant case no Graham vs. John Deere analysis was made but rather the test set out in MPEP 706.03(e) and *In re Marosi* was applied while explaining why the claimed product does not patentably distinguish over the prior art under 35 USC 102/103.

4. Claims 1-4, 8-18 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over EP'469 (which is an analog to U.S. 6,455,645). Therefore, for convenience US'645 is discussed..

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US'645 discloses living radical polymerization process for the production of oligomeric and polymeric telechelic compositions, the telechelic compositions produced in this manner and to use thereof in the plastics, fibers or lacquer sectors (abstract).

Disclosed is a process for production of oligomeric and polymeric substances of the formula  $Y_1-Q-Y_2$

wherein Q represents an oligomeric, optionally substituted hydrocarbon residue with a molecular weight  $300 < Q < 10000$  of the formula shown in line 25 of col.4

with B) an initiator compound or a mixture of such compounds,

C) a transition metal compound or a mixture of compound and D) one or more complex ligands which are capable of complexing the central atom(s) of the compound C, characterized in that polymerization is performed

E) a functionalizing reagent which has at least one C=C double bond and least one of the desired functional groups  $Y_1, Y_2$ .

The US'645 invention also provides the telechelic substances obtainable using this process. This meets the limitations of the instant claims in terms of adding the compound having a functional group and an internal alkenyl group.

5. Applicants are advised that the following patents can be applied as potential rejections under 35 USC 102(e)/102(a) for claims 1-4: Nakagawa (Pub. 2002/0188080); Nakagawa (Pub. 2003/0065100); Kitano et al (U.S. 6,423,787); Kusakabe et al (U.S. 6,420,492); Nakagawa et al (Pub. 2002/0137841).

***Allowable Subject Matter***

6. Claims 5-7 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. There is no anticipation or suggestion that functionalizing compound would be a functional group containing cyclic olefin

### ***Response to Arguments***

7. Applicant's arguments with respect to rejection of claim over Shafer have been considered but are moot in view of the removal of Shafer's reference from the scope of rejection.

8. Reference to Shafer has been withdrawn from the scope of 35 USC 102 rejection.

9. Applicant's arguments filed June 5, 2003 have been fully considered but they are not persuasive. The crux of Applicants' arguments with regard to Matyaszewski reference is that the scheme of Example 23 is not enabling. In response to this it is noted that Applicants did not present any experimental or other evidence on why the reference is not enabling. Even if a reference discloses an inoperative device, it is prior art for all that it teaches." Beckman Instruments v. LKB Produkter AB, 892 F.2d 1547, 1551, 13 USPQ2d 1301, 1304 (Fed. Cir. 1989). Therefore, "a non-enabling reference may qualify as prior art for the purpose of determining obviousness under 35 U.S.C. 103." Symbol Techs. Inc. v. Opticon Inc., 935 F.2d 1569, 1578, 19 USPQ2d 1241, 1247 (Fed. Cir. 1991). See further MPEP 2121.02, ...when a prior art reference merely

discloses the structure of the claimed compound, evidence showing that attempts to prepare that compound were unsuccessful before the date of invention will be adequate to show inoperability. In re Wiggins, 488 F.2d 538, 179 USPQ 421 (CCPA 1971).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tatyana Zalukaeva whose telephone number is (703) 308-8819. The examiner can normally be reached on 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (703) 305-2450. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Tatyana Zalukaeva  
Primary Examiner  
Art Unit 1713

August 22, 2003

  
**TATYANA ZALUKAEVA**  
**PRIMARY EXAMINER**